

ABSTRACT OF THE DISCLOSURE

An automatic transmission ratio shift and shift feel control system and
5 method for a powertrain having an engine, multiple-ratio gearing controlled by friction
elements actuated by hydraulic pressure, an output shaft torque sensor producing a
signal representing the magnitude of current output torque, an electronic controller for
controlling the target output torque based on the current output torque, increasing the
torque capacity of the oncoming friction element and decreasing the torque capacity of
10 the offgoing friction element after a gear ratio change is initiated. During the inertia
phase of the ratio change, the controller controls the engine speed to follow a
predetermined rate of change of input speed. The strategy employs an electronic
throttle and closed loop engine torque control and closed loop engine speed control at
various phases of the gear shift, to improve shift feel. Various engine parameters,
15 including throttle position, ignition timing, engine air-fuel ratio, and engine airflow,
control engine torque and speed, are used to control input torque or input speed,
depending upon the shift phase.

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